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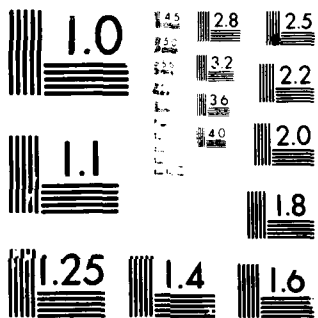
ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GR--ETC F/G 6/20
TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT--ETC(U)
MAY 80 A W SINGER

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**UNITED STATES ARMY
ENVIRONMENTAL HYGIENE
AGENCY**

ABERDEEN PROVING GROUND, MD 21010



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TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT AI3-36567
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND
STUDY NO. 75-51-0904-80
MAY 1976 - MARCH 1980

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May 1976-March 1980

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ALLEN W. SINGER, CPT, VC

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AI3-36567 USDA Proprietary Compound
Candidate Repellent
Eye Irritation
Skin Irritation
Topical Hazard Evaluation

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

A preliminary hazard evaluation of AI3-36567 was performed by means of laboratory animal studies using rats, rabbits, and guinea pigs. The technical grade compound caused mild corneal and conjunctival irritation, but no skin or photoirritation. It did not sensitize guinea pigs or prove to be an acute ingestion hazard. It was recommended that AI3-36567, USDA Proprietary Compound, be approved for further testing as a candidate insect repellent.

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DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

CPT Singer/cf/AUTOVON
584-3980

HSE-LT-T/WP

21 MAY 1980

SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellent
AI3-36567, US Department of Agriculture Proprietary Compound, Study
No. 75-51-0904-80, May 1976-March 1980

Executive Secretary
Armed Forces Pest Management Board
Forest Glen Section, WRAMC
Washington, DC 20012

A summary of the pertinent findings and recommendations of the inclosed report follows:

A preliminary hazard evaluation of AI3-36567 was performed by means of laboratory animal studies using rats, rabbits, and guinea pigs. The technical grade compound caused mild corneal and conjunctival irritation, but no skin or photoirritation. It did not sensitize guinea pigs or prove to be an acute ingestion hazard. It was recommended that AI3-36567, USDA Proprietary Compound, be approved for further testing as a candidate insect repellent.

FOR THE COMMANDER:

1 Incl
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U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-LT-T/WP

TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT AI3-36567
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND
STUDY NO. 75-51-0904-80
MAY 1976 - MARCH 1980

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research Service, Southern Region, Insects Affecting Man Research Laboratory, Gainesville, Florida, 5 May 1976.

b. Memorandum of Understanding between the US Army Environmental Hygiene Agency; the US Army Health Services Command; the Department of the Army Office of The Surgeon General; the Armed Forces Pest Control Board; and the US Department of Agriculture, Agricultural Research, Science and Education Administrations; titled, Coordination of Biological and Toxicological Testing of Pesticides, effective 23 January 1979.

2. REFERENCE. Toxicology Division Procedural Guide, US Army Environmental Hygiene Agency (USAEHA), 1972, revised 1976.

3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of the candidate insect repellent AI3-36567.

4. SUMMARY OF FINDINGS. A hazard evaluation of the candidate repellent AI3-36567, US Department of Agriculture (USDA) Proprietary Compound, was conducted by this Agency using New Zealand White rabbits for skin and eye studies, Hartley guinea pigs for a skin sensitization study and Sprague-Dawley rats for determination of oral toxicity. A tabular presentation of animal toxicity data developed in this Agency follows:*†

* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education, and Welfare Publication No. (NIH) 74-23, revised 1978.

† The experiments reported herein were performed in animal facilities fully accredited by the American Association for the Accreditation of Laboratory Animal Care.

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Study No. 75-51-0904-80, May 76-Mar 80

TABLE. PRESENTATION OF DATA

Test	Results	Interpretation
<u>SKIN IRRITATION STUDIES</u>		
<u>Rabbits</u>		
Single 24-hour application to intact and abraded skin of New Zealand White rabbits.	Compound AI3-36567 did not cause any irritation of the intact skin or of the skin surrounding an abrasion.	USAEHA Category I (ref Appendix).
0.5 mL technical grade compound applied to each of six rabbits.		
<u>EYE IRRITATION STUDIES</u>		
<u>Rabbits</u>		
Single 24-hour application of 0.1 mL technical grade compound to one eye of each of six New Zealand White rabbits.	Compound AI3-36567 caused mild corneal injury in 5 of 6 rabbits, and in addition, moderate conjunctival injury in all 6 rabbits. Evidence of injury and irritation had cleared by 7 days post instillation.	USAEHA Category C (ref Appendix).
<u>APPROXIMATE LETHAL DOSE (ALD)</u>		
<u>Oral</u>		
Rats (male) - no diluent	ALD >3300 mg/kg	Presents little lethal hazard from accidental ingestion.

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Test	Results	Interpretation
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PHOTOCHEMICAL SKIN IRRITATION STUDIES

Rabbits

A single 0.05 mL application of a 25 percent (w/v) solution of the compound and a 10 percent (w/v) Oil of Bergamot solution (positive control) in 95 percent ethyl alcohol were applied to the intact skin of six rabbits. Five minutes after application, the rabbits were exposed to UV light (365 nm) for 30 minutes at a distance of 10-15 cm.

A 25 percent solution of AI3-36567 in ethanol did not cause a photochemical irritation reaction under test conditions.

Compound AI3-36567 did not cause a photochemical irritation reaction under test conditions and is not expected to cause a photochemical irritation in humans.

Control

Following UV exposures of the rabbits, 0.05 mL of test compound, positive control and diluent were applied to additional skin areas to serve as unirradiated control sites. Application areas were checked for skin irritation at 24, 48 and 72 hours.

Positive control application and irradiation caused greater irritant effects than in unirradiated skin areas.

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Test	Results	Interpretation
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SENSITIZATION STUDIES

Guinea Pigs (Male)

Intradermal
injections of 0.1 mL
of a 0.1 percent
solution (w/v) of
AI3-36567 or of
dinitrochlorobenzene
(DNCB)* in a mixture
containing 1 volume
of propylene glycol
and 29 volumes of
saline.

Ten test guinea pigs were
given 10 sensitizing doses
over a 3-week period.
After 2 weeks rest, they
were challenged with ID
injections of test compound.

Challenge dose of AI3-36567
did not produce a sen-
sitization reaction.

Compound AI3-36567
did not produce a
sensitization reaction
under test conditions
and is not expected to
produce a sensitization
reaction in man.

Ten positive control guinea
pigs were sensitized over
3 weeks with DNCB. After 2
weeks rest, they were chal-
lenged with ID injections
of DNCB.

Challenge dose of DNCB in
positive control guinea
pigs produced a marked
sensitization reaction in
10 out of 10 guinea pigs.

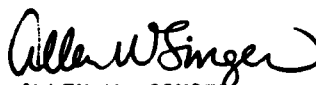
DNCB produced a marked
reaction, indicating the
guinea pigs respond to
sensitizing agents.

* A known skin sensitizer.

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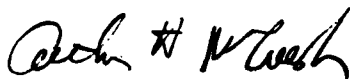
5. CONCLUSION. Technical grade compound AI3-36567 caused mild corneal injury in rabbits, but no skin or photoirritation, no skin sensitization, and did not prove to be an acute ingestion hazard.

6. RECOMMENDATION. Under the provisions of the Memorandum of Understanding (paragraph 1b), it is recommended that AI3-36567, USDA Proprietary Compound, be approved for further testing as a candidate insect repellent.



ALLEN W. SINGER
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Veterinary Animal Laboratory Officer
Toxicology Division

APPROVED:



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Chief, Toxicology Division

APPENDIX

TOPICAL HAZARD EVALUATION PROGRAM
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation, and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals, prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds noninjurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.

